New UK LiDAR network to detect volcanic ash

1 June 2015 - New system installed to improve volcanic ash detection.

A network of particle-sensing Light Detection and Ranging Systems (LiDARs) has been installed across the UK to improve detection and aid forecasting of volcanic ash in the event of future eruptions.

The Met Office is installing ten (including a mobile version) LiDARs specifically designed to sense atmospheric particles around the country as part of a £3m Department for Transport funded project.

The new network, designed and installed by Raymetrics S. A ., provides observations to the UK's Volcanic Ash Advisory Centre (VAAC), run by the Met Office, to provide more detailed information on the location and characteristics of ash that could impact aircraft flight paths.

This information will support improved forecasts on the dispersion of ash to enable decision-makers in the aviation sector to take action to ensure the safety of travellers and minimise any potential disruption.

Aviation Minister Robert Goodwill said: "The 2010 volcanic ash cloud led to flights being grounded for days at a time, not just here in the UK but across Europe and further afield, with knock on effects on international airports around the globe. It had a significant impact on travellers, the aviation industry, and wider economy.

"This new equipment, funded by the DfT, will allow the UK's Met Office to track ash clouds more easily and predict how they might spread more accurately. That could play a big part in minimising disruption to flights during any future incident."

LiDAR works by probing the atmosphere using light from a pulsed laser source. Backscattered light from suspended aerosols is collected using a receiver (telescope) and analysed.

This provides a profile of the vertical distribution and characteristics of particles in the atmosphere. Each unit will be collocated with a sun photometer to support ongoing research into more accurate and timely estimates of particle concentration levels.

Used in conjunction with data from satellites and other ash detection capabilities such as the Met Office Civil Contingency Aircraft (MOCCA), the information will provide experts at the Met Office with the best possible picture of real-time ash distribution.

Ian Lisk, Head of the Natural Hazards team at the Met Office, said: "The new LiDAR network will significantly improve our overall ability to monitor and forecast the distribution of volcanic ash over the UK."

"Our forecasts are used by partners at the National Air Traffic Service to make decisions on flight safety across UK airspace, based on the safety thresholds set by the Civil Aviation Authority and the International Civil Aviation Organisation ."

During the 2010 volcanic ash incident, a network of older laser-based equipment, originally set up to measure cloud heights, was reconfigured to provide ash observations. The new LiDAR network will be more advanced and will include the capability to distinguish ash from other types of suspended aerosols.

The project is currently under way and is expected to be completed and operational by the spring of 2016.

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